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ABSTRACT

This paper begins by establishing the need for new world views and social invention. Its thesis is that: 1) reform must begin at both the individual and system levels; 2) we must clearly see how we are caught in systems within systems; and, 3) by responding somewhat acquiesently to these systems, we help keep them stabilized. The author first provides a model to account for human behavior, and discusses the way perceptions, values, expectations, and loyalties lead to foundations for social organization, custom, law, and institutions. Many of these widely shared values are associated with preservation of a society from inner and outer threats, and pursuit of national interests. The behavior of nations and empires is then characterized, mainly in terms of the dynamics of leadership, how it interacts with the shared values, and the process of decision making by national leaders. The author discusses the importance of population and technology as parameters affecting the decisions of its leaders and attempts to account for the importance of these variables through a series of propositions. Machine (or man-machine) simulations of all levels of decision and control with real world data would allow us to determine scientifically not only how basic area, resource, population, production and other variables have combined and are combining, but also what trends are likely to continue, with what consequences. (Author/JLB)

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ALTERNATE FUTURES FOR SOCIETY: CERTAIN VARIABLES AND PARAMETERS

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ALTERNATE FUTURES FOR SOCIETY: CERTAIN VARIABLES AND PARAMETERS

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THE NEED FOR SOCIAL INVENTION

Overpopulation, the unanticipated (and destructive) consequences of technology, the depletion of critical resources, and the threat of mass weaponry are factors of extraordinary importance to humankind now and in the immediate future. Changes are taking place more rapidly, moreover, than the ability of human institutions (or even the individual human psyche) to keep up and adjust. The possibilities of mass starvation, bitter competition for scarce resources, domestic and foreign violence and widespread destruction cannot be ignored. We need new world views and a great deal of social invention if human beings are going to move into the future with some possibility of well-being and dignity. Yet we cannot seem to get started.

Man needs to alter his ways, and time is short. He needs to develop alternate patterns for the future. The question is, how quickly can he come to see his errors and begin developing new ways of living and of accommodating himself to the irritating and often seemingly threatening and dangerous idiosyncrasies of his fellow man?

If Man needs to reform himself, there would seem to be two places to begin: (1) with the individual, through education, conditioning, training,

incu[illegible]tion of new values, and so forth; (2) and by changing the social milieu, or environment, or the overall system.

The difficulty with the first approach lies with the fact that it is not easy to alter the behavior patterns of the individual unless the social milieu is supportive of the new behavior patterns that are being encouraged. And the reality of today's world seems to be that few, if any, of our current societies are conducive toward or supportive of anything much other than the types of human behavior that now prevail. What we have are very effective incubators for producing more of the same.

That, however, is only part of the paradox.

Since societies are only the aggregate, interactive and reciprocal habit structures of large numbers of individuals, we are not likely to make much progress in the alteration of our milieu, of our social webs, or of interactive, repressive and casualty producing patterns unless we alter the behaviors of individuals.

Where can we start?

The thesis of this paper is that we must start in both places at once -- and that we must see clearly from the start how all of us are caught in the interstices of systems within systems within systems of social habit structures and how, by responding more or less acquiescently to these systems, we help keep them stabilized, we strengthen them, and we put off the possibility of (1) altering ourselves (INDIVIDUAL) and (2) changing the milieu (SYSTEM) in truly significant ways, as opposed to minor tinkering.

The emphasis in this paper will be upon the SYSTEM rather than upon the individual, for this reason, that psychology and related social sciences might have a better possibility for helping the individual alter

himself (with tools that are already at hand) if we had a better idea how to begin turning the SYSTEM. As it is, of course, anything positive we teach the individual (to love his fellow man, for example, or to find new ways of handling his personal conflicts) is likely to be countermanded sooner or later by the SYSTEM (out-compete the rival, incarcerate the trespasser, execute the criminal, kill the enemy) and in no uncertain terms (or you will fail, suffer ridicule, be imprisoned yourself, or possibly even executed). Nation-state and empire systems, with a few exceptions, may be viewed as fairly stable inequality-maintaining and casualty-producing systems.

All this suggests that almost all human societies are shot through with contradictions of the most fundamental sort, and thus it is small wonder that we do not make much overall progress in changing either individuals or societies. The good citizen is merely the man or woman who learns to maneuver more or less "successfully" down the centers of various paradoxes. He does not really "love" (how can he, without being "taken"),* but he keeps his hatreds from finding full target (except in situations, such as war, in which the society licenses and indeed requires him to kill). And the most discouraging aspect of the problem is that no one has the slightest notion how to run large societies in any way basically different from that which characterized societies today (left, right, center, they are essentially the same): by virtue of a ruling elite or set of elites (how they are chosen or "elected" does vary somewhat)

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*It can be argued that the parent who educated his child in "pure Christianity" or its equivalent would be conditioning that child for almost certain "failure."

enjoying a monopoly of armed force and relying on the exercise (or threat) of that force to maintain "law," "order" and cchesion. The transgressor is not treated with "love." He is disgraced, dispossessed, locked up, shot, gassed, hanged or electrocuted. And the normal conclusion is that he "deserved" it. That is how large human societies are run, and no one has come up with any reaily viable substitute that any large number of people are willing to try.

We sometimes delude ourselves into believing that we have changed things in some fundamental way. We have "liberated" somebody, or we have "set men free" or we have "made the world safe for democracy." In fact, what we have done is replace one ruling elite with another ruling elite -- perhaps killing in the process several million human beings, most of whom had little or even nothing to do with the evils we pride ourselves on having eradicated.

In some respects human beings may be more dependent upon violence now than they were in more "primitive" stages of social, political, economic and technological development. Development of the state marked a turning point. Previously, human bands and tribes had maintained "law," "order" and cohesion largely through common interest, kinship ties and social pressures, inciuding ridicule, directed toward the deviant.

The development of human organization from the band and tribe levels to the state level can be accounted for in considerable part, at least, by changes in population (increases in numbers of people) and by developments in technology, that is, advances in human knowledge and skills. More people and more complex means of production "required" more complicated, more unequal and more coercive structures of organization. Further along we shall see how these "master variables" continue to influence human affairs.

This paper seeks to show how the individual and his society interact to preserve basic forms and processes (whether or not they are any longer useful for human survival) and to move human affairs in directions which often are neither foreseen nor specifically desired.

ACCOUNTING FOR INDIVIDUAL BEHAVIOR

Individual human behavior can be accounted for in terms of a tendency to test "input energies," cognitions of things as they are, against some criteria established in the organism, some preferred state of affairs, and to respond if the results of the test, via feedback, is to reveal an incongruity, discrepancy or gap. This is to say, in terms used by Alan Howard and Robert A. Scott, that any alteration in the organism's internal organic system or in its external environment that disrupts its homeostatic balance creates a "problem" to be solved. The tendency is to continue responding until the incongruity, discrepancy, gap or "problem" vanishes.* Human behavior is thus identified as the outcome of a need to reduce or close the gap between a real state of affairs, as perceived by the actor, and a preferred state of affairs. The existence of such a gap, incongruity, discrepancy, or problem may be said to give rise to dissatisfaction, tension or demand.** "When tension is zero there is no action and there can be no motivation to performance."*** It should

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*Compare with Miller, Galanter and Pribram,[12] page 26, the Howard and Scott article, [10] pages 146-149, and J. A. Deutsch,[6] pages 33-34.

**Used here synonymously; compare with stress as used by Howard and Scott,[10] pages 146-149. Parsons, Bales and Shils refer to motivational drive or need disposition.

***"There can only be distribution of tension in the system, not an absolute deficit of it."[13] (page 97).

be kept clearly in mind that perceptions of the "real" state of affairs and definitions of what is preferred are highly personal and subjective.

Human beings are moved in their behavior not only by the pressure of immediate discrepancies, but also by recollections of past events and by perceptions of distant goals that are contemplated in the imagination. As suggested by Kenneth Boulding, it is this " . . . possibility of being moved in the large which perhaps differentiates man from the lower animals more than any other feature of his nature. It is this capacity which enables him to endure war, marriage, religion and education -- institutions which are also peculiar to man and which carry him to adventure and to martyrdom."[2]

The activities of the nervous system may be divided into two types of feedback process. The first is reflex behavior. It is inborn, genetically determined in detail, and is not appreciably modified by individual experience. The second is learned behavior, which is not inborn nor genetically determined in detail, but is markedly modified by the organism's individual experiences.[1] Simple feedback consists in the reinsertion of information for the relatively unsophisticated, short term regulation and control of the system. "If, however, the information which proceeds backward from the performance is able to change the general method and pattern of performance, we have a process which may well be called learning."[15] This amounts to the capacity for using information about the environment and operations upon the environment in order to deal with that environment more effectively. Miller, Galanter and Pribram refer to TOTE, that is, Test-Operate-Test-Exit, as when a carpenter drives a nail or a boy rides a bicycle.[12,5]

These policy and decision-making processes include the comparison, in terms of appropriateness, of various possible plans or strategies of means-end hierarchies of response on the basis of (a) goals, (b) recollections of past experience and habit, (c) emotions and feelings, (d) expectations about the environment, including other actors, and so forth. Also involved is the activation or emotional charging of one plan or strategy above the others, which then provides a basis for behavior.

Each human being maintains perceptions of the universe, of man's role in it, and of his own particular position and interactions with his fellows. He develops habits, preferences, attitudes, expectations, perceptions of what was, what is, what ought to be, and what can and cannot be. He maintains expectations of "self" and of various "others", identifications and loyalties. Not only will he maintain feelings and attitudes toward his family, friends and neighbors, but also toward the populace at large, toward the culture of which he is a part, toward his superiors (and inferiors), toward his tribe or state, toward the king or other primary leader, and so forth.

An individual will begin to develop confidence in his associations and collaborations with other people to the extent that his <u>expectations</u> of reciprocations are validated by <u>actual behavior</u>. As pointed out by Karl Deutsch, "Expectations concerning the behavior of groups as well as the behavior of individuals imply predictions of regular or frequent patterns of behavior. In the absence of very strong traditional or psychological reasons to the contrary, expectations which are consistently disappointed seem unlikely to be maintained at full strength. There is, therefore, some link, though not a complete link, between the

continued strength of expectations and the quality of the predictions upon which they are based, even though the extent of tolerable deviations from expected behavior may vary in different periods and among different groups. Insofar as members of a stable political community must be able to expect more or less dependable interlocking, interchanging, or at least compatible behavior from each other, they must be able, at least to that extent, to predict one another's actions."[8]

To the extent that perceptions, values, preferences, expectations, identifications, loyalties, habits and selections of response are shared and/or reciprocated and/or complemented by other individuals in the environment there emerges a foundation for community, for organization, for custom, for what Durkheim called the conscience collective,[9] for custom, law and for institutions. The nature and pattern of the conscience collective will depend upon the course of societal interactions in the past and also upon the level (band, tribe, chiefdom, nation or whatever) to which the society has evolved.

Custom, law and institutions may be viewed thus as expectations of interaction validated by more or less habitual responses on the part of many people. The behavior of the individual will be deeply influenced by his perception of -- and feelings about -- such more or less shared phenomena. On the other hand, the behavior of an interpersonal organization will depend on what perceptions, expectations, preferences, habits and responses are shared by the members -- and how widely and intensely.

Wherever it exists, a particular conscience collective tends to function as a stabilizer of behavior. Many of the widely-shared values constituting the conscience collective are associated with preservation of the society and its institutions from inside and outside threat and

pursuit of national interests and goals more or less as defined by the borders. It is precisely the invocation of these values that is likely to run counter to other widely inculcated values pertaining, for example, to the rights of the individual and to the uses of violence. Whatever the inconsistencies, however, the values associated with national survival and interest cannot easily be questioned without seeming to challenge national welfare and security. Therefore they tend, under ultimate test, to override those personal values with which they are in conflict. To date it is difficult to identify on the international level anything like a world conscience collective -- although international law and custom, the Charter of the United Nations, the regulations of certain specialized international agencies and a few more or less vaguely defined feelings about human rights and the dangers of nuclear war may represent embryonic beginnings. Objectively, the welfare of a given nation may depend in the long run upon the welfare of mankind as a whole, but such sentiments are not deeply embedded in any large number of national conscience collectives, and the individual who maintains such a priority of values is likely to find himself in a deviant position within his own society.

Meanwhile, the expectation that a government will (and ought to) exert force against its overt domestic challengers and resort to warfare against foreign threats remains a "stable" aspect of most conscience collectives.

THE BEHAVIOR OF NATIONS AND EMPIRES

Nations and empires, strictly speaking, do not perceive or act. Individuals perceive and act, frequently in the name of the state, either singly or in collaboration. As an individual, the emperor, king,

prime minister or president, like all the rest of us, tries to maintain some equilibrium between his internal, domestic environment (his central nervous system, digestive system, circulatory system, and so on) and his external environment (everything outside himself). An internal disturbance (disease, for example) can profoundly affect his external behavior, and conversely, an external event (including the behavior of another human being) can alter his internal equilibrium and functioning in very basic ways. As head of state, the emperor, king, prime minister or president operates also and somewhat analogously in an environment internal to his state or empire and in another environment external to it. He presides over the balance between domestic demands of his country and the pressures, demands, competitions, conflicts and threats of the outside world. It is often tricky business. These environments are fundamentally interdependent and interactive. If he invests too many resources in guns (for use against his external opponents), he may not provide his people with enough butter. If he spends too much on butter, he may not be able to protect the state from outside attack. In any case, his primary and overriding responsibilities pertain to the protection of the state from its domestic and external challengers and the pursuit of national interests essentially as he interprets them.

The dynamics of leadership emerge from competition and from the tendency for the more effective individuals (in terms of whatever "game" is being played) to dominate the less effective. This is true among states and empires, among classes and interest groups, and among leaders and would-be leaders within a given society. From this we may conclude that when the "game" changes significantly, the type of

players (leaders) is likely to change. The process can be curtailed to some extent, of course, by hereditary succession: the first monarch in a dynasty achieves sovereignty on the basis of a measure of political effectiveness, and then passes the crown along to his son or other kinsman. Custom, habit and law may maintain the procedure through several or many generations, but in theoretical terms, on the other hand, each monarch must nevertheless maintain some level of competence or risk the subversion of his authority or overthrow by a rival claimant.

The head of state must also maintain some minimal support from his lieutenants, his bureaucrats and some portion of the larger constituency.* The behavior of the head of state is thus constrained, limited, biased or skewed, and otherwise influenced (depending on how capacities are distributed and perceived to be distributed) by perceptions and expectations held by other officers of government and by the citizenry about goals, means, roles, statuses and reciprocations, and about where the head of state ought to fit and how he ought to behave.** To the degree that these perceptions, expectations and habitual reciprocations have been internalized by the head of state, by other officers of

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*"The monarch believes that he himself rules, whereas in fact behind the screen the bureaucracy enjoys the privilege of operating without controls and without being accountable to anybody."[15] (p. 1407) See also Rosenau.[14]

**Compare with Durkheim,[9] p. 195: "Any personality, as powerful as he might be, would be as nothing against a whole society. That is why . . . the force of authoritarian governments does not come from authorities themselves, but from the very constitution of society."

government and by the citizenry, they serve, in Parsonian terms, as stabilizers of behavior.*** They become a part of the conscience collective.

Frequently, the decision process in large societies is so complex that the causal chain giving rise to a given major outcome is exceedingly difficult to trace.

There is a widespread view that when an organism interacts with its environment (including other organisms) the outcome of the interaction is the response (R) of the organism. In this view, either the organism or the environment may be altered in the process, but the next response (R) is again an outcome of a distinct organism "separated from but interacting with" a distinct environment. Thus, every one of the determinants of the response (R) is viewed as contained in the organism or in the environment.[5]

Isadore Chein has noted, however, that "an interaction between O and E [organism and environment] affects the outcomes of other interactions between O and E." This interaction, as viewed by Chein, although it "affects the outcomes of other interactions between O and E," is "not distinctly an O fact nor an E fact." For example, as a person writes, he holds his pen. According to Chein, "My writing behavior is a motive for my holding my pen; I cannot write without holding my pen or an equivalent instrument. The including behavior is not per se a motive; it becomes a motive only if some subsidiary behavior is necessary to it; and

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***As used in this context, stability carries no moral or ethical connotation. It can be argued, for example, that many stable empires and nation-states have been essentially conflict, casualty-producing, sometimes tyrannical systems.

the latter (holding the pen, in the present instance) is motivated by the former (the act of writing)."

Something similar could be said with respect to maintaining national security, which becomes a motive for raising the level of weaponry.

THE "HIDDEN HAND" IN POLICY MAKING

We frequently think of national decisions as being made in direct response to some threat (S) or other activity of another country, or as steps directed toward certain widely shared and publicly identified goals such as the survival of a country, or the strengthening of its security, or the enhancement of its trade, or the maintenance of freedom or world peace. When national goals are thus stated, national policies seemingly laid down in their pursuit give an appearance of having resulted from careful thought, calculation, weighing of values, and a balancing of alternatives. This is the stuff of which speeches from the throne, state of the union addresses, and presidential statements in times of intense crisis are commonly fashioned.

Often the head of state, even a dictator, is severely constrained in what he can decide. For example, he may find the alternative courses of action severely limited by decisions which already have been made by other people. Some previous decisions of a limiting nature may have been reached by a statesman's predecessor in office, as when a head of state "inherits" a war from the former armaments which, in turn, may become a motive for something else (acquiring a particular scarce resource, for example, and so on).

From this Chein has concluded that "a behavior is a motive of the behaviors it includes." Thus, when an interaction takes place between an

organism and its environment and when such an interaction becomes a condition of mediating interactions -- "note well, not succeeding interactions, but mediating interactions that determine the course of the primary interaction that is still going on while the mediating interaction occurs -- then we are dealing with a new class of determinants of behavior."[5]

Along the same line, Karl Deutsch has pointed out how goal changing may be an important part of the feedback processes themselves. Thus, ". . . if a goal A has been approached to the extent of a given threshold value, the reaching of the threshold will trigger a rearrangement of some elements in the communication system, so as to give priority to another feedback circuit steering the system in the direction of another goal B. If B is reached, the system may return to the search for A, or go on to a third goal-seeking circuit steering it toward goal C, and so on."[7]

Similarly, in their book A Strategy of Decision, David Braybrooke and Charles E. Lindbloom draw attention to the (frequently) reciprocal relationship between means and ends. "Although there is a fundamental sense in which ends govern means, there is an equally fundamental sense in which proximate ends of public policy are governed by means."[4] Objectives tend to shift, for example, with a shift in possible means.

We might conclude from such considerations as these that networks of secondary, tertiary and even more extended "motivations" of an implementing nature are likely to propel (contribute to the causation of) many outcomes that were scarcely contemplated when a major national policy (maintenance of security, for example, or response to a specific threat) was officially decided upon.

In large bureaucracies we are thus confronted by a characteristic type of widely dispersed, often anonymous decision-making of an implementing

kind which originates in small increments and often then accumulates into an overall policy. If the data were available, for example, we would not be surprised to find the low-level, day-to-day decisions of clerks, technicians and relatively unimportant administrators in a Ministry of Defense, for example, taking gradual shape as a policy which neither Prime Minister nor Cabinet nor Opposition, when it achieved office, could ignore or wholly reverse.

There are other important considerations which may affect the decision-making of national leaders in subtle, indirect, but powerful ways. One of these is often referred to as "disjointed incrementalism," which amounts to the breaking down of large problems into small ones and then "neglecting the fact that the solution of one small problem is all too likely to aggravate the difficulty of another one." Thereupon, "we solve the second problem, which creates a third problem, we solve that, which creates a fourth problem, and so on, hoping, believing in fact, where we cannot prove, that the series converges and that problems diminish as we go along."[3] Often they do not diminish, however. Often they snowball, all the small incremental decisions giving rise to a really big problem, possibly a catastrophe.

As pointed out by Braybrooke and Lindbloom, such disjointed and incremental analysis evaluation and decision-making frequently takes place in a large number of points in society. "A problem as many faceted as national security, for example, is under study in at least hundreds and perhaps in several thousands of different centers -- government agencies, universities, private organizations, committees, and other institutions. Furthermore, regardless of certain notions about efficiency, each of many different approaches is taken simultaneously by dozens or hundreds of

centers in imperfect communications with one another."*

Disjointed incrementalism amounts to an "elegant restatement of the fine old British principle of muddling through." The outcome may be "good" or "bad" from one point of view or another, but either way, the phenomenon itself raises difficulties and challenges for the scholarly investigator.[3]

A phenomenon closely related to disjointed incrementalism is that of "externalities," which is "simply the idea that an individual solving his own problem and maximizing his own aggregate value may have outputs of positive or negative value which other people have to absorb as inputs and for which the original decision-makers do not have to pay."[3] The smog problem is a case in point, each of us contributing his share, more or less, when he solves his daily personal problem of driving to and from work.** The 1929 stock market crach, inflation, water pollution, soil depletion, ghettos, famine areas, colonies and the draft toward war are other examples of situations which are widely deplored but also perpetuated by the "hidden hand" to which we all contribute. The size of a nation's population at any given time is an outcome of millions of private decisions, "conscious" or "unconscious," to have children (or not to have them). In these terms, too, a country's level of technology may be viewed as the outcome of millions of decisions, positive or negative, by scholars, inventors, research and development people, underwriters, and so forth. Or a country's overseas investments, which are widely perceived as having

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*Braybrooke and Lindbloom,[4] on pages 104-105, are advocating a policy style, but it seems evident that "creeping" disjointed incrementalism can bring about a wide range of unforeseen and largely unaccounted for outcomes.

**In this case, each of us is undoubtedly paying, however, and paying through the nose, at that.

to be defended, may well be the result of decisions made by merchants and financiers seeking a lawful living (by satisfying our demands) and acting quite independently of the formal policies of their government.

In these ways the pursuit of millions of small individual interests tends to move the whole society in certain directions (or to constrain its movement in others). And since the individual interests are largely legitimate and, taken increment by increment, seemingly harmless, it becomes exceedingly difficult to establish any locus of overall responsibility -- and therefore extremely difficult to bring about an overall change of policy. The individual, moreover, is not likely to be disposed toward altering his own behavior (reducing his daily quota of smog, for example, by walking to and from work), first, because he has legitimate cause for his current behavior and, second, because even if he should change, his fellows may scarcely be counted upon to alter their behavior.

POPULATION AND TECHNOLOGY ON MASTER VARIABLES (AND PARAMETERS)

The population of a country and the level of its technology (knowledge and skills) are important parameters affecting the decisions of its leaders in terms of crisis or other important confrontation or contingency. At the very best, a country's population and level of technology help determine its power and status, the "ball park" in which it will play. There is also some evidence that differential rates of population growth and technological advancement contribute to the behavior patterns of a given country. For example, countries with high rates of population growth combined with rapid technological growth seem to be prime candidates for expansion and external conflict. Similarly, a more powerful country is likely to feel challenged and threatened to the extent that a rival country begins to overtake it in terms of population growth and technological advance.

How do we account for the importance of these variables? The answer seems to lie in the complex blend and interaction of millions of industrial "needs" and "demands" as expressed and acted upon by the institutions of the society as a whole.

1. Each individual may be viewed as an energy producing, an energy storing and an energy consuming organization or system. There are four main types of energy used by human beings: psychic energy, effective (emotional) energy, muscular energy, and energy unlocked from the environment through application of technology (knowledge and skills).
2. As biological organism, human beings require such basic resources as air, food, water, and some amount of territory. The larger a given population, the greater is likely to be the amount of resources demanded.
3. Human technology (knowledge and skills) also creates a demand for resources. The more advanced the level of technology among a given population, the greater will be the range and quantity of resources required to sustain that technology and advance it further. Advancing knowledge and skills also alter a people's perceptions of what they "need" and consequently their demands are likley to increase.
4. With respect to interpersonal systems (including nation-states and empires), population and technology combine multiplicatively to produce human demands for resources. Such demands may be generated among the ruling or other specialized elite or among the rank and file of populace or among both. Such demands may be satisfied in whole or in part by acquisition of resources either directly from

original sources or through trade. The scarcer the resources relative to population and level of knowledge and skills, the greater will be the level of (unsatisfied) demands.

5. National leaderships may be viewed as operating cybernetically to minimize or close one (or a combination) of three types of gap. The most basic of these (a) is a gap between resources that are "needed" or demanded and resources that are actually available.* The second (b) is the gap between an expectation and the reality that materializes (as, for example, when climbing productivity begins to decline); and the third (c) is a gap between the actor's level of resources or growth rate and that of a competitor or rival.** Behavior at any given time may be accounted for in considerable part by one, or, more probably, a combination of such gaps. (Gaps in military and naval power, prestige, status and other attributes may exacerbate existing gaps or create new ones.)

On a fundamental level, the first gap involves biological necessities such as food, water, air, and some amount of territory. But advances in technology alter a society's perception of what is "needed" and thus tend to increase demands (a California family "needs" one, two or three automobiles). People's views of what they "need" and their consequent demands are shaped also by their anticipations (images generated from past experience and rates of growth) and by what they see their neighbors demanding and acquiring. It seems evident, then, that none of these

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*This concept can be broadened to include social demands or "needs" and other benefactions.

**Compare with Howard and Scott[10] on pages 141-159.

three gaps is purely biological or purely technical or otherwise mechanical. All three gaps (and others that may exist and that may be important in particular situations) have subtle, influential and often extremely powerful cognitive and emotional or affective aspects. We should not be misled if the description of these gaps and the associated propositions sound barren and mechanistic. The realities are complex, subtle and rich, with underpinnings, overlays, and interblendings of cognitive and affective elements that defy adequate treatment in limited space.

For conceptual purposes it is frequently convenient to postulate that such gaps give rise to tension (stress, dissatisfaction) which, in turn, impels behavior. Tension is a relatively intangible concept, however, and one is often hard put to decide upon an appropriate indicator. Stress behavior, however, may be viewed as an indication of severe dislocation somewhere in the social system.

6. Absolute levels of population, technology, territory, resources and trade affect a nation's overall capabilities, its power, prestige and status. Rates of change along these dimensions (as well as absolute amounts) contribute to the shaping of a nation's values, preferences, predispositions, institutions and behaviors.
7. In their efforts to close gaps between what is available and what is "needed," desired or demanded, both individuals and interpersonal systems tend to allocate certain proportions of the energy available to them for the development of specific capabilities. These special capabilities may involve methods of hunting, methods of trading, methods of agriculture, methods of warfare, methods of diplomacy, industrial production, and so forth. The achievement

of alliances is one method of increasing a nation's capability or of denying additional capability to a rival nation, or both.

8. Demands and specific capabilities (whether developed by ruling elites or important sectors of the populace or both) combine multiplicatively to produce what might be called lateral pressure (cf. "disjointed incrementalism" and "externalities," supra). This amounts to a tendency to invest energy and acquire some degree of influence over a wider extent of space or among a larger number of other people or both. Such tendencies toward lateral pressure may take the form of economic penetration, investment, and exploitation, but there are also other forms it may take. In whatever form, the outcome is likely to involve an expansion of national interests.* Lateral pressure is thus a general tendency of which various types of conquest, imperialism, colonialism, domination and so forth are special cases.

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*In a crudely oversimplified way we may assert that

$$\frac{\text{Population X Technology}}{\text{Resources (including area)} \pm \text{Trade}} = \text{Demands}$$

Demands X Specialized Capabilities (military, agricultural, industrial, commercial, scientific, etc.) = Lateral Pressure (tendency to invest energy outward).

However, rates of change will in many respects be more significant than absolute levels. In a general way, this formulation might be viewed as applying also to nations or colonies within an empire, classes or interest groups within a nation-state, people in a ghetto, and so forth.

In any case, an increase in knowledge and skills will tend not only

Population growth may indicate either an increase or decrease in the capabilities of a nation-state.* Additional increments of population indicate more consumption and heavier demands upon the resources and national product. These demands can be met through the exercise of specialized capabilities of one type or another in order to increase resources (through the location and mining of new deposits, through the acquisition of new territory and so forth) or by means of advances in technology (the further organization and application of knowledge and skills) for identifying and harnessing existing resources or through a combination of both -- as in Germany after 1870.

A population increase will contribute to national capability, however, only to the extent that -- on balance -- the additional numbers of people produce more than they consume. This suggests technological advances more or less commensurate with population growth. Education in productive knowledge and skills will tend to increase national capabilities. On the other hand, rapid population growth combined with inadequate technological advances can only add to a country's frustration and helplessness.

9. Nation-states and empires with high lateral pressure (whether generated by ruling elites or important sectors of the populace or by a combination of both) tend to extend their influence in search of raw materials and markets. Also, high levels of energy

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to require more resources for building and operating machines, but it will also create new perceived "needs" or desires and consequently demands among the populace.

*Additional increments or power may be attributed to a country --

and surpluses of capital often tend to seek some kind of investment even when resources are relatively plentiful. This tendency to expand may find expression through exploration, migration, conquest, commerce, financial investment, colonization, economic or military assistance to other countries and so forth.* The outcome, as suggested in Proposition 8 supra is likely to involve a considerable expansion of national interests or of private interests seeking national protection, or a combination of both.

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such as China -- on the basis of a large population, even though the per capita productivity is critically low. Although we have not dealt with them systematically in this paper, the perceptions which each nation has of itself and other nations are often of very great importance.

*The integration of many nation-states and empires may be viewed in terms of a high energy generating unit which extends its influence, power and control laterally to encompass neighboring units of less capability. William-the-Conqueror thus encompassed England; ambitious French kings expanded their power laterally from Paris; the United States moved westward from the Atlantic coast subduing Indian tribes, seizing Arizona, New Mexico, California and other territories all the way to the Pacific and beyond.

Russia pushed eastward in somewhat similar fashion. This expansion may involve outright conquest or what might be called coercive administration.

It is our strong suspicion that these overall tendencies are shared by states whose political and financial leaderships are somewhat distinct and by other states such as those of a totalitarian "socialist" regime, whose economies are more or less under the direct control of the political leaders. In other words, we doubt that the elimination of capitalism would be sufficient, in itself, for inhibiting expansion on the part of a state whose population and technology were growing rapidly relative to the availability of resources. It cannot be over-emphasized that national demands may be generated in both private and public sectors.

10. The higher the lateral pressure generated by a given state or empire the greater will be its tendency to extend its interests and influence into (and often domination over) territories and countries with a lower level of capability.

In line with the concept of allometry and with Charles Osgood's principle of hierarchical peaking we would expect, with regard to nation-states within the same system, that the more frequent and intense their interactions, the more the activity level of the more "effective" nation will be enhanced along some dimension of effectiveness, and the activity level of the less effective nation depressed. A high energy producing nation will tend to dominate a less capable nation with which it interacts with great frequency whether or not such domination is part of a conscious policy. This would account for the differentiation of Great Powers, Medium Powers, and Lesser Powers, and also for finer gradations of rank and status within these broad categories. It accounts also for various colonial, imperialistic

and neo-imperialistic phenomena, political and economic penetration and spheres of influence. We might expect that national leaderships would often be strongly motivated to maintain and, if feasible, enhance the effectiveness of their respective states relative to their competitors. In developing such motivation they may be responding to their own personal demands, or to the demands of rank-and-file populace, or to the demands of political or economic special interest groups or to a combination of two or more of these.

Depending upon national history and culture, upon their assessment of the international system of which their country is a part, and upon their assessments of their country's own relative capabilities and other attributes, the leaders of a nation-state will tend to pursue some general strategy of operation in order to steer toward their goals. State strategies often differ considerably, two nations employing quite distinct means for pursuing the same or similar goals. As a general rule, we would expect leaders of a nation-state to use those strategies and styles which they have found to be effective in the past. Tensions will be generated, however, to the extent that conditions have changed and formerly useful strategies are no longer effective. As a nation-state substantially increases its all-around capabilities and its status within the international system, moreover, the strategies of behavior will tend to change. We would postulate, in fact, that whereas nation-states with relatively little power may display culturally specific attitudes and behaviors, the greater the increases in capability and status, the more the attitudes and behavior are likely to become role specific.

Our focus in this study will be upon a limited number of European empires that were recognized during the period 1870-1914 as Great Powers. We would expect some, but not all, of the hypotheses to apply also to powerful states and empires (such as the United States at the turn of the century) with something less than Great Power status. We assume that Medium and Lesser Powers pursue their own categories of goal and exhibit characteristic patterns of behavior depending upon their position in world and regional configuration, their particular dimensions and resources, and so forth.

11. As a nation-state or empire extends influence (and hence its interests) there frequently tends to develop a feeling among the leaders (and also often among the rank and file of citizenry) that this influence and these expanding interests ought to be protected. This tendency may give rise to the extension of military or naval forces, the development of a tendency to police areas beyond the legal boundaries of the state or empire, and a feeling of responsibility for regional or even world "law and order." During the nineteenth and early twentieth century this role was played by Great Britain par excellence; more recently it has been played by the United States.

Again, we suspect that these tendencies characterize states with high rates of population and technological growth (relative to resource availability) whether such states are western democracies, socialist dictatorships or capitalist dictatorships.

12. The desire to achieve and maintain law and order (as defined by the national leadership) and protect national interests (or large private interests) in far-off places may lead to wars against

indigenous tribes, chiefdoms and petty principalities, and the effort to attract, equip and partially finance client chiefs, princes, warlords or other rulers or ruling groups.

We believe that this pattern has been characteristic of many high energy producing states and empires from the Roman Empire down to the present. During their periods of exploration, conquest, and colonial expansion the French and British empires offer other examples. After World War II, however, the modes of expanding influence as displayed by high energy producing states in both the capitalist and socialist camps, so called, have been notably different.

It cannot be overemphasized that rates of population growth and rates of technological development seem to contribute more to lateral pressure in many instances than absolute levels -- although a society with very large population and very highly developed technology is likely to produce considerable lateral pressure because of its great size and the great amounts of energy generated.* Also, we must remind ourselves that lateral pressure, as used in this presentation, is not synonymous with violence. Commercial activities, financial activities, diplomatic activities, exploration and migration are manifestations of lateral pressure. The point is that expanding patterns of such activities often create expanding areas of private and/or public (national) interest, which concurrently or subsequently may serve as claims for national defense.

Undoubtedly there are psychological elements which exert powerful influence. In particular instances it is quite possible that demands

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*Presumably great population density may contribute to lateral pressure also, even though the density rate is not increasing.

could be met as well or better by larger domestic rather than foreign investments of energy or by a different type of activity than that actually undertaken. Colonies have frequently cost far more than they have yielded, and defense of outlying interest is often not at all cost effective. Imperialism is thus not necessarily a matter of account book profit (as Lenin's theory of imperialism suggested), although in particular instances it may be. There are likely to be strong irrational elements in what appears to be a tendency toward lateral pressure when population and technology are both rising. Rapid growth itself may generate affective (emotional) predispositions toward expansion in ways we do not fully understand. At least, this possibility must be kept open.

Further considerations must be kept in mind: a national leadership may perceive a gap which does not, in fact, exist; or fail to perceive a gap that does exist, or consider it of no consequence, or perceive it as larger or smaller than it really is. And beyond this, the action taken by a national leadership to close a particular gap may be more or less effectual, or utterly dysfunctional or even disastrous.

13. To the extent that two (or more) countries with high energy levels and high lateral pressure tendencies extend their interests and psycho-political borders outward, there is a strong probability that sooner or later the opposing perimeters of interest will intersect at one or more points. There is often a feeling on the part of an aspiring but still somewhat weaker or less prestigious power that it is being "encircled" by its rivals. When this happens, we may expect the competition to intensify and tend to

become transformed into conflict and perhaps a so-called cold war or arms race. Crises are likely to emerge around such intersection points.

These tendencies often lead to colonial wars between either the two or more high lateral pressure nations or their local clients or both. The French and Indian wars in North America (during which Algonquin tribes were clients of the French and Iroquois tribes were clients of the British) and French-English clashes in India (and clashes between British and French client rajahs and sultans) during the eighteenth century offer classic examples.

14. Competitions and conflicts between two or more high lateral pressure countries frequently lead (either directly or through colonial or client wars or through some combination of local and more diffused conflicts) into arms races, crises, and large scale wars.

So it is that otherwise legitimate growth and "advancement" can contribute to better competition, conflict, violence and the domination of weaker societies.

Here it must be emphasized that lateral pressure, as well as other aspects of nation-state and empire behavior, can be accounted for by all three of the gaps, identified in Proposition 5, more or less in combination. Depending upon the state of a nation's growth, however, and upon the characteristics of a particular circumstance or set of events, we would expect one or another gap to be especially important. Demands for status (or for some advantage calculated to yield status) can replace demands for basic resources. Through time we would expect considerable change in the proportional functioning of the three

gaps depending upon the origins and characteristics of stimuli which the national leaders perceived as most salient.

It is also essential to keep in mind that competition (both inside and outside a state) can be pursued in a variety of modes, in terms, indeed, of any currency which has the possibility of contributing to the advantage, influence or outright power of one individual, group or society relative to the advantage, influence or outright power of another individual, group or society. Thus, capitalism and capitalist imperialism offer one mode of competition and one source of inequality, domination and power, but there are other modes.

Intuitively, we would expect population, technology, territory-resources, and trade to combine in the following ways to yield characteristic patterns and predispositions:

moderate and stable population; high and growing technology; "adequate" territory and resources; high and favorable trade	prosperous, progressive, non-aggressive society; high standards of public welfare (Sweden today)
large and growing population; low and lagging technology; "inadequate" resources; possible large underdeveloped territory; low or unfavorable trade	high basic demands, but low capability involving a mass society near subsistence level; disintegrated political and economic systems; "warlordism"; penetration from outside by aggressive, high lateral pressure states (China, 1912-1924)
large and rapidly growing population; rapidly growing	centralized, aggressive, militaristic society; likely to feel "surrounded,"

technology; "inadequate" resources; limited territory; low, unfavorable, restricted, or at least "inadequate" trade relative to demands	blocked; likely to seize first opportunity for expansion (Japan, 1930)*
large and growing population; high and rapidly developing technology, high level of resources but needing particular resources from outside; large territory (or colonial holdings); high, generally favorable trade	Great Power with considerable lateral influence and pressure, strong generator of energy; prime candidate for Great Power competitions, arms races, and the like (Great Britain at the beginning of the twentieth century; U.S. and the USSR fifty years later)

This grouping may mislead us, however, unless we remind ourselves that the international system is highly dynamic. States and empires do not "stand still" relative to other states in terms of population, technology (organization and application of knowledge and skills), territory and resources, military capabilities, and so forth. Comparatively, dimension by dimension, some are likely to be growing and others declining, and these changes tend to keep the international system in a condition of perpetual alteration and readjustment -- a dynamic, sometimes almost "explosive" flux. Nations and empires that have reached an extremely advanced level of economy may tend to lose much of their vigor, while "younger" states surge ahead.

Differential changes in population, differential changes in technological and economic growth, and differential changes in military

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*Japanese trade may be viewed as high, but insufficient for the rapidly increasing demand for resources.

capability are thus likely to be especially influential in altering the power configuration and balance of the international system, often setting the stage for competition, expansion, conflict, arms races, cold wars, and similar phenomena. Such conflicts often prepare the way for crisis, some of which amount to preliminary tests of capability and intention.

POSSIBILITIES FOR DESIGNING ALTERNATE FUTURES

These propositions suggest the ways in which nearly all human beings, whatever their condition or status, are caught in the interstices of their respective nation state or empire systems and how these systems, in responding to individual "demands" and aggregates of "demands," perpetuate certain types of domestic attitudes and predispositions on the part of the citizenry and certain typical patterns of external behavior on the part of the various nation states and empires interacting with one another. Designs for alternate futures will require investigation and intercession at the most basic roots and foundations of society.

As suggested above, these considerations underscore some very real and desperately serious paradoxes associated with the preservation by armed force of law, order, freedom, justice and other basic values. They suggest the need for other ways of preserving cohesion, law and order on both the national and international levels. The state, which amounts to a monopoly of force by a ruling elite (however that elite is legitimized or enfranchised), finds itself in an extremely difficult and paradoxical position, especially as it is called upon, however justly, to preserve peace by violence or ensure justice by threat of annihilation. There is accumulating evidence that force

stimulates counter-force to the extent that means of counter-force are available. If these profound difficulties confront the state, it seems evident that in a world government along the lines of any conventional models we can think of the problems would be many times compounded.

There may not be any lasting answer. This is a possibility that we must seriously contemplate. However, we now have on hand certain methods of experimentation and inquiry that Man has never before held at his disposal. Today there is no reason at all (other than for lack of funds or of basic human will) why we could not begin immediately to build machine (or man-machine) simulations of local provincial, national and international levels of decision and control with real world data. Such undertakings would allow us to determine in scientific fashion not only how basic area, resource, population, production and other variables have combined in the past and are combining now, but also what trends are likely to continue into the future if fundamental changes of course are not brought about, and with what consequences. This can be done experimentally on an "if this, then probably that" basis. There are possibilities for much more sophisticated projections than simple linear extrapolations provide.

It would also be possible to design "alternate futures" by changing certain variables (cutting population in half, for example) or by altering basic relationships or postulating new behavioral patterns and new values and institutions. By refining and extending the types of quantitative data used in the experiments, it should be possible to build a wide range of sensitive, stable, more or less "self-regulating," democratic, adaptive models and find out just how much abuse each alternative can accommodate and still readjust itself. We should be thus

able to carry out "revolutions" without shedding a drop of blood, to build utopias by design, and to wipe the board clear of our failures with no harm done.

According to Alan Howard and Robert A. Scott, "In a given population the degree of deviation (including illness and crime) will correlate directly with the degree to which the problems confronting the people remain unsolved and the degree to which legitimate means of relieving tension are blocked."[10] On all interpersonal levels from the small group to the international system we postualte that the greater the blockage, the higher is likely to be the level of violence (and other pathological phenomena) or, conversely, that a high level of violence will serve as an indicator of the degree of blockage.[15]*

The purpose of controlled simulations with real world data would be to locate blockages and investigate alternative social organizations and institutions better calculated to support the individual human being in his search for less conflicted and more constructive, peaceful, rewarding and satisfying styles of day-to-day living.

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*Compare with Lasswell[11] on page 73.

REFERENCES

1. ASHBY, W. R., 1960. Design for a Brain. John Wiley & Sons, New York.

2. BOULDING, K. E., 1962. Conflict and Defense. Harper & Brothers, New York.

3. BOULDING, K. E., 1969. Economics Imperialism, a Review Article. Behavioral Science. 14: 496-500.

4. BRAYBROOKE, D., AND LINDBLOOM, C. E., 1963. A Strategy of Decision. The Free Press, Glencoe, Ill., 93.

5. CHEIN, I., 1962. The Image of Man. J. Social Issues. 18: 1-35.

6. DEUTSCH, J. A., 1960. The Structural Basis of Behavior. University of Chicago Press, Chicago.

7. DEUTSCH, K. W., 1963. The Nerves of Government. The Free Press, New York, 195.

8. DEUTSCH, K. W., 1954. Political Community at the International Level. Doubleday, Garden City.

9. DURKHEIM, E., 1933. The Division of Labor in Society. The Free Press, Glencoe, Ill.

10. HOWARD, A., AND SCOTT, R. A., 1965. A Proposed Framework for the Analysis of Stress in the Human Organism. Behavioral Science. 10: 141-160.

11. LASSWELL, H. D., 1950. World Politics and Personal Insecurity. A Study of Power. The Free Press, Glencoe, Ill.

12. MILLER, G. A., GALANTER, E., AND PRIBRAM, K. H., 1960. Plans and the Structure of Behavior. Henry Holt, New York.

13. PARSONS, T., BALES, R. F. AND SHILS, E. A., 1953. Working Papers in the Theory of Action. The Free Press, Glencoe, Ill.

14. ROSENAU, J. A., 1963. National Leadership and Foreign Policy. Princeton University Press, Princeton.

15. WEBER, M., 1968. Economy and Society, Vol. 3. Bedminster Press, New York.

16. WIENER, N., 1956. The Human Use of Human Beings. Doubleday, Garden City.